User's Manual

RI78V4 V2.00.00

Real-Time Operating System

User's Manual: Debug

Target Device
RL78 Family

Renesas Electronics
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(2012.4)

How to Use This Manual

Readers

This manual is intended for users who design and develop application systems using RL78 family products.

Purpose

This manual is intended for users to understand the functions of real-time OS "RI78V4" manufactured by Renesas Electronics, described the organization listed below.

Organization

This manual consists of the following major sections.

CHAPTER 1 GENERAL
CHAPTER 2 FUNCTIONS
APPENDIX A WINDOW REFERENCE

How to Read This Manual

It is assumed that the readers of this manual have general knowledge in the fields of electrical engineering, logic circuits, microcontrollers, C language, and assemblers.

To understand the hardware functions of the RL78 family.
-> Refer to the **User's Manual** of each product.

Conventions

Data significance:	Higher digits on the left and lower digits on the right
Note:	Footnote for item marked with **Note** in the text
Caution:	Information requiring particular attention
Remark:	Supplementary information
Numeric representation:	Decimal ... XXXX
	Hexadecimal ... 0xXXXX

Prefixes indicating power of 2 (address space and memory capacity):

K (kilo)	$2^{10} = 1024$
M (mega)	$2^{20} = 1024^2$

Related Documents

The related documents indicated in this publication may include preliminary versions. However, preliminary versions are not marked as such.

Document Name		Document No.
RI Series	Start	R20UT0751E
	Message	R20UT0756E
RI78V4	Coding	R20UT3375E
	Debug	This manual
	Analysis	R20UT3373E

Caution The related documents listed above are subject to change without notice. Be sure to use the latest edition of each document when designing.

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CHAPTER 1 GENERAL

The CS+ is an integrated development environment used to carry out tasks such as design, coding, build and debug for developing application systems for microcontrollers manufactured by Renesas Electronics.

This manual describes the resource information tool. This tool is useful for debugging programs using the "RI78V4" real-time OS functionality within this integrated program-development process.

1.1 Overview

When debugging programs using the RI78V4 functionality, it is possible to use the resource information tool to confirm the resource information (e.g. system information and memory area information) that changes dynamically as the program executes.

1.2 Features

Below are the features of the resource information tool.

- Confirm resource information
  When the program running in the debugging tool is stopped at an arbitrary location, the current status of the resource information appears in the Realtime OS Resource Information panel.

CHAPTER 2 FUNCTIONS

This chapter describes the key functions provided by the resource information tool along with operation procedures.

2.1 Overview

The resource information tool can be used to confirm the resource information (e.g. system information and memory area information) that changes dynamically as the program executes.

The operating procedures for the resource information tool are described below.

(1) Start CS+

Launch the CS+ from the [start] menu of Windows.

Remark See "CS+ Integrated Development Environment User's Manual: Start" for details on "Start CS+".

(2) Open project

Open the project to debug.

Remark See "CS+ Integrated Development Environment User's Manual: Start" for details on "Open project".

(3) Select debug tool

Select the type of debugging tool with which to debug the program (IECUBE, E1, E20 or Simulator).

Remark See "CS+ Integrated Development Environment User's Manual: RL78 Debug" for details on "Select debug tool".

(4) Download programs

Download the program to debug.

Remark See "CS+ Integrated Development Environment User's Manual: RL78 Debug" for details on "Download programs".

(5) Open Realtime OS Resource Information Panel

Open the Realtime OS Resource Information panel.

Remarks 1. When a program using the RI78V4 functionality is downloaded, this panel opens automatically.

2. The value will be indeterminate for the resource information shown when the RI78V4 system initialization is incomplete, because it will not be managed by the RI78V4.

(6) Execute/stop programs

Run the program to the location for which you wish to display the resource information.

Remarks 1. See "CS+ Integrated Development Environment User's Manual: RL78 Debug" for details on "Execute/stop programs".

2. You can debug a program efficiently using “Section skip function” of the debugger. For example “step in” execute on a service call issue point, the debugger skip all internal process of RI78V4 and break by reaching the user application part. See "CS+ Integrated Development Environment User's Manual: RL78 Debug" for details on "Section skip function".

Remark

(7) Confirm Resource Information

On the Realtime OS Resource Information panel tabs (e.g. [System] tab and [Memory Area] tab), check the current status of the resource information.

2.2 Open Realtime OS Resource Information Panel

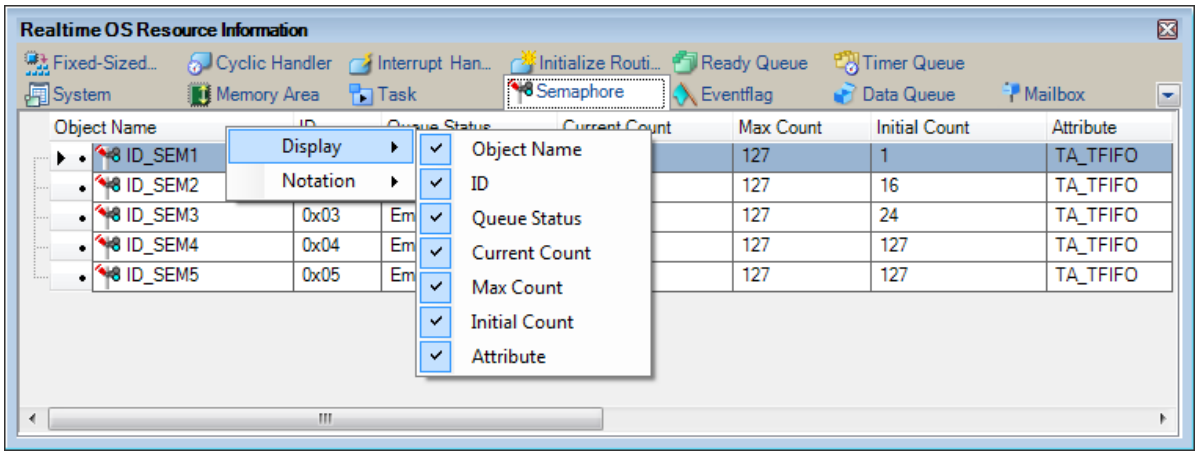
The Realtime OS Resource Information panel is used to confirm the resource information (e.g. system information and memory area information). This panel opens automatically when a program using the RI78V4 functionality is downloaded.

2.2.1 Select item

The resource information tool enables you to select the items to display in the Realtime OS Resource Information panel.

To select which items are displayed, right click on the header (header column or row) in the Realtime OS Resource Information panel, and from the context menu that appears, select "Display".

Figure 2-1. Select Item



Remark Select items to display by selecting their checkboxes.

Table 2-1. Select Item

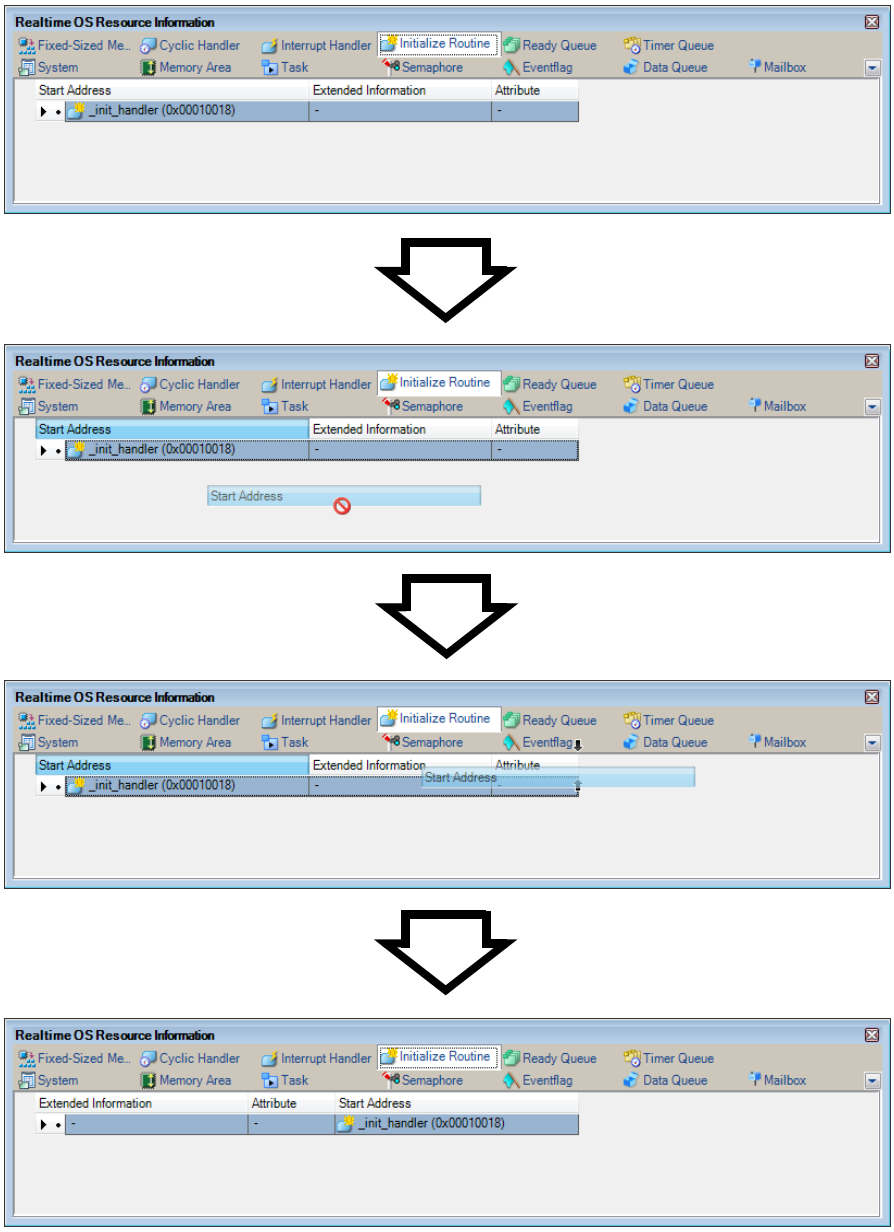
Checked	The item in question will be displayed.
Not checked	The item in question will not be displayed.

2.2.2 Move column

The resource information tool enables you to change the order of items (columns) displayed in the Realtime OS Resource Information panel.

To change the display order, drag the columns in the Realtime OS Resource Information panel, and drop them to the desired position.

Figure 2-2. Move Column

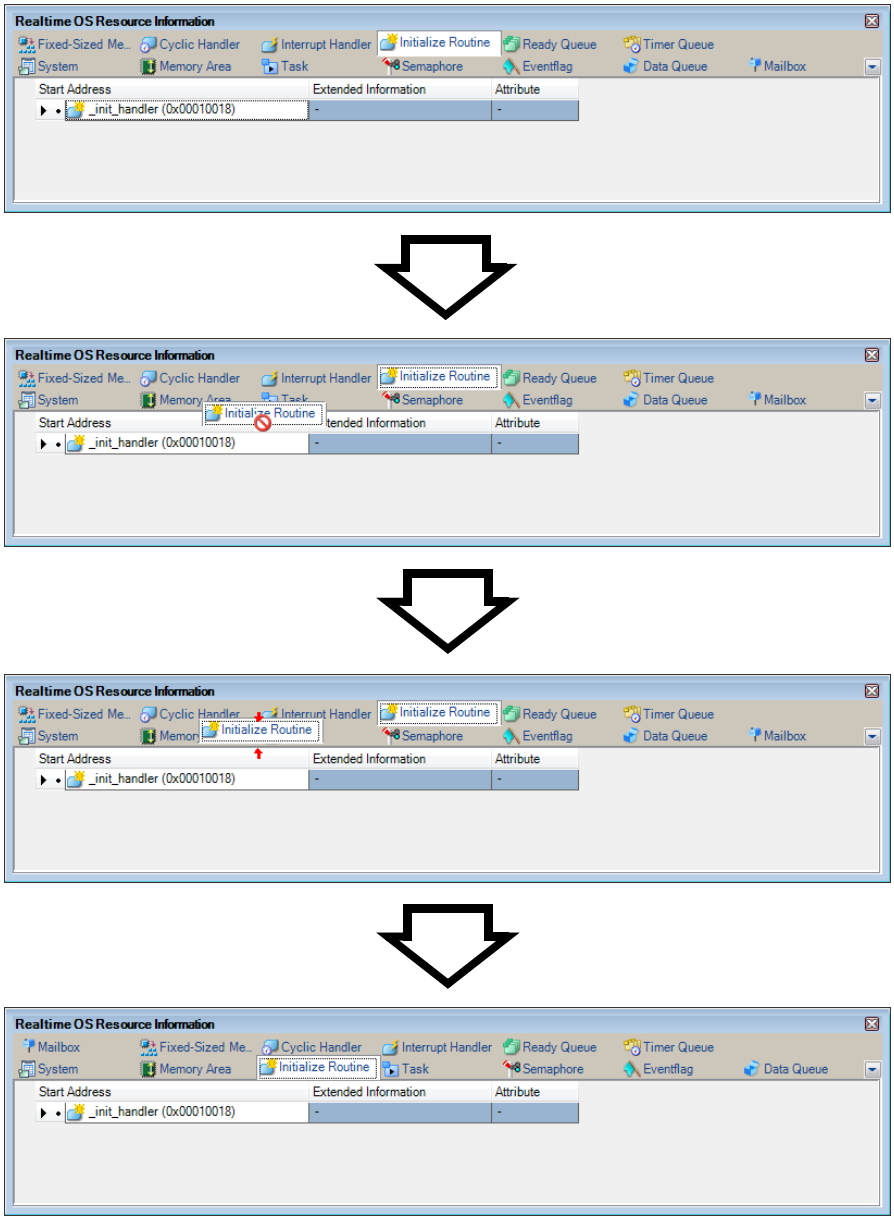


2.2.3 Move tab

The resource information tool enables you to change the order of items (tabs) displayed in the Realtime OS Resource Information panel.

To change the display order, drag the tabs in the Realtime OS Resource Information panel, and drop them to the desired position.

Figure 2-3. Move Tab



2.3 Confirm Resource Information

Check the resource information when program execution is stopped via the various tabs of the Realtime OS Resource Information panel (e.g. [System] tab and [Memory Area] tab).

The Realtime OS Resource Information panel is made up of the following tabs.

- [System] tab
- [Memory Area] tab
- [Task] tab
- [Semaphore] tab
- [Eventflag] tab
- [Data Queue] tab
- [Mailbox] tab
- [Fixed-Sized Memory Pool] tab
- [Cyclic Handler] tab
- [Interrupt Handler] tab
- [Initialize Routine] tab
- [Ready Queue] tab
- [Timer Queue] tab

Remark Switch tabs in the tab selection area of the Realtime OS Resource Information panel.[Interrupt Handler] tab

APPENDIX A WINDOW REFERENCE

This appendix describes the panels of the resource information tool.

A.1 Description

The panels of the resource information tool are listed below.

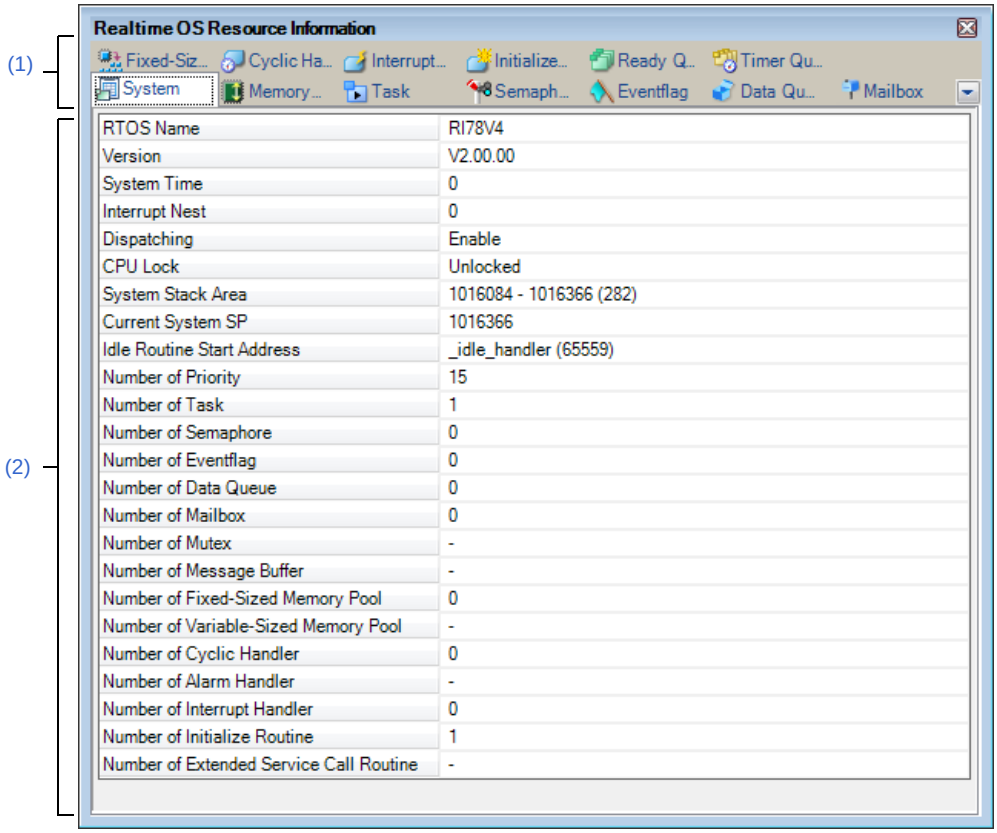
Table A-1. Panel List

Panel Name	Description
Realtime OS Resource Information panel	This panel displays the resource information (e.g. system information and memory area information) of the RI78V4.

Realtime OS Resource Information panel

This panel displays the resource information (e.g. system information and memory area information) of the RI78V4.

Figure A-1. Realtime OS Resource Information Panel



RTOS Name	RI78V4
Version	V2.00.00
System Time	0
Interrupt Nest	0
Dispatching	Enable
CPU Lock	Unlocked
System Stack Area	1016084 - 1016366 (282)
Current System SP	1016366
Idle Routine Start Address	_idle_handler (65559)
Number of Priority	15
Number of Task	1
Number of Semaphore	0
Number of Eventflag	0
Number of Data Queue	0
Number of Mailbox	0
Number of Mutex	-
Number of Message Buffer	-
Number of Fixed-Sized Memory Pool	0
Number of Variable-Sized Memory Pool	-
Number of Cyclic Handler	0
Number of Alarm Handler	-
Number of Interrupt Handler	0
Number of Initialize Routine	1
Number of Extended Service Call Routine	-

The following items are explained here.

- [How to open]
- [Description of each area]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Tab selection area

Select a tab to switch the content displayed in the Information display area.

This panel has the following tabs:

- [System] tab
- [Memory Area] tab
- [Task] tab
- [Semaphore] tab
- [Eventflag] tab
- [Data Queue] tab

- [Mailbox] tab
- [Fixed-Sized Memory Pool] tab
- [Cyclic Handler] tab
- [Interrupt Handler] tab
- [Initialize Routine] tab
- [Ready Queue] tab
- [Timer Queue] tab

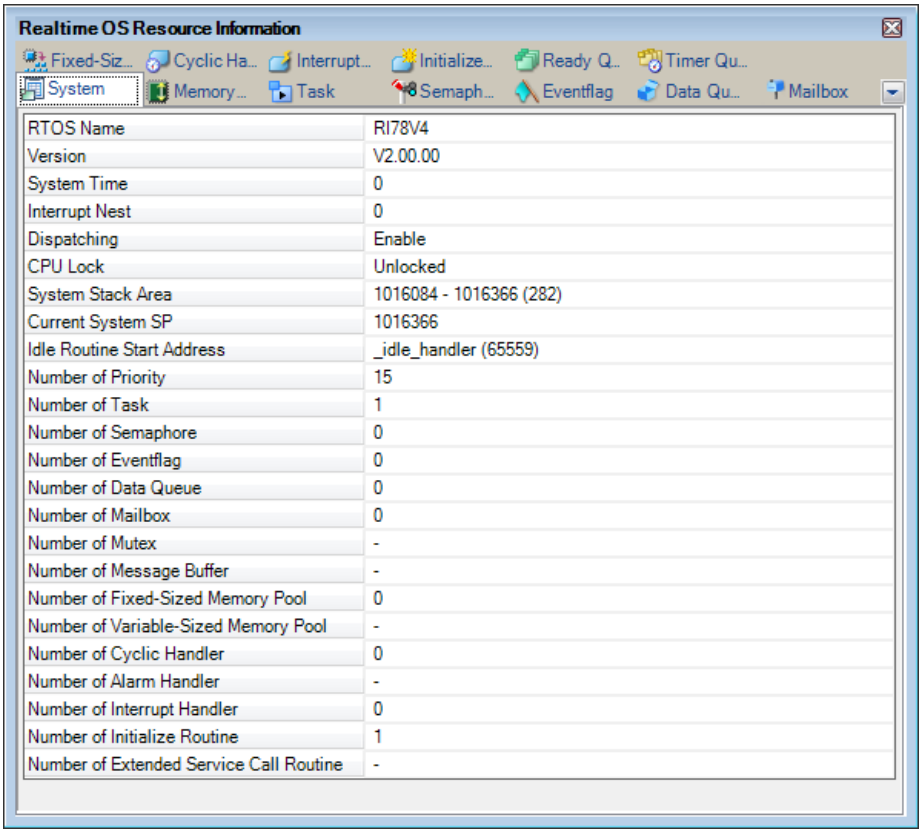
(2) Information display area

This area displays the resource information (e.g. system information and memory area information) of the RI78V4.

[System] tab

This tab displays the system information (e.g. RTOS Name and Version) of the RI78V4.

Figure A-2. [System] Tab



RTOS Name	RI78V4
Version	V2.00.00
System Time	0
Interrupt Nest	0
Dispatching	Enable
CPU Lock	Unlocked
System Stack Area	1016084 - 1016366 (282)
Current System SP	1016366
Idle Routine Start Address	_idle_handler (65559)
Number of Priority	15
Number of Task	1
Number of Semaphore	0
Number of Eventflag	0
Number of Data Queue	0
Number of Mailbox	0
Number of Mutex	-
Number of Message Buffer	-
Number of Fixed-Sized Memory Pool	0
Number of Variable-Sized Memory Pool	-
Number of Cyclic Handler	0
Number of Alarm Handler	-
Number of Interrupt Handler	0
Number of Initialize Routine	1
Number of Extended Service Call Routine	-

The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the system information (e.g. RTOS Name and Version) of the RI78V4.
This area consists of the following items.

RTOS Name	The RTOS name "RI78V4" is shown.
Version	The version of the RI78V4 is shown.
System Time	The system time is shown.

Interrupt Nest	The nesting level of interrupt processes (including CPU exception processes) is shown.	
Dispatching	The system state of the RI78V4 is shown.	
	Disable	Dispatch disabled state
	Enable	Dispatch enabled state
CPU Lock	The system state of the RI78V4 is shown.	
	Locked	CPU locked state
	Unlocked	CPU unlocked state
System Stack Area	The start address, end address, and size (in bytes) of the system stack are shown in the following format. Start address - End address (Size)	
Current System SP	If the processing program is operating on the system stack, the start address of the system stack is shown. If it is running on the task stack, then the current SP value is shown.	
Idle Routine Start Address	The start address of the idle routine is shown.	
Number of Priority	The maximum priority of the task is shown.	
Number of Task	The total number of tasks is shown.	
Number of Semaphore	The total number of semaphores is shown.	
Number of Eventflag	The total number of eventflags is shown.	
Number of Data Queue	The total number of dataqueues is shown.	
Number of Mailbox	The total number of mailboxes is shown.	
Number of Mutex	"-" is shown.	
Number of Message Buffer	"-" is shown.	
Number of Fixed-Sized Memory Pool	The total number of fixed-sized memory pools is shown.	
Number of Variable-Sized Memory Pool	"-" is shown.	
Number of Cyclic Handler	The total number of cyclic handlers is shown.	
Number of Alarm Handler	"-" is shown.	
Number of Interrupt Handler	The total number of interrupt handlers is shown.	
Number of Initialize Routine	The total number of initialize routines "1" is shown.	
Number of Extended Service Call Routine	"-" is shown.	

Remarks 1. If the system information (System Stack Area, Current System SP) in the cell is double clicked, then Memory panel displays the contents of the system stack, and the caret moves to the corresponding location.

2. If the system information (Idle Routine Start Address) in the cell is double clicked, then Editor panel displays the source file of the idle routine, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header column

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. RTOS Name, Version, System Time, Interrupt Nest, Dispatching, CPU Lock, System Stack Area, Current System SP, Idle Routine Start Address, Number of Priority, Number of Task, Number of Semaphore, Number of Eventflag, Number of Data Queue, Number of Mailbox, Number of Mutex, Number of Message Buffer, Number of Fixed-Sized Memory Pool, Number of Variable-Sized Memory Pool, Number of Cyclic Handler, Number of Alarm Handler, Number of Interrupt Handler, Number of Initialize Routine, Number of Extended Service Call Routine	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. System Time, Interrupt Nest, System Stack Area, Current System SP, Idle Routine Start Address, Number of Priority, Number of Task, Number of Semaphore, Number of Eventflag, Number of Data Queue, Number of Mailbox, Number of Mutex, Number of Message Buffer, Number of Fixed-Sized Memory Pool, Number of Variable-Sized Memory Pool, Number of Cyclic Handler, Number of Alarm Handler, Number of Interrupt Handler, Number of Initialize Routine, Number of Extended Service Call Routine	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

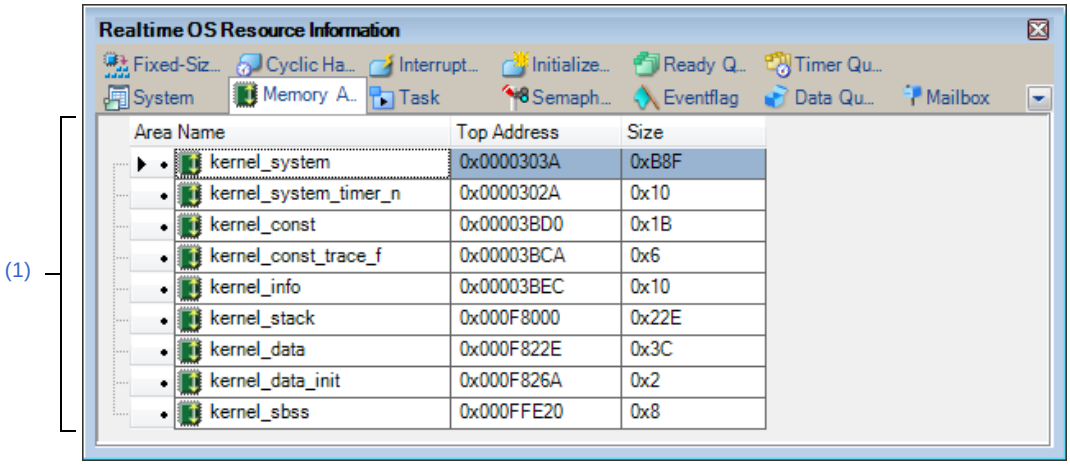
(2) Footer column

Jump to Memory (Current System SP)	Opens the Memory panel, and displays the contents of the Current System SP.
Jump to Source (Idle Routine Start Address)	Opens the Editor panel, and displays the source code of the idle routine.
Jump to Disassemble (Idle Routine Start Address)	Opens the Disassemble panel, and displays the results of disassembling the idle routine.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Memory Area] tab

This tab displays the memory area information (e.g. Area Name and Top Address) of the RI78V4.

Figure A-3. [Memory Area] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the memory area information (e.g. Area Name and Top Address) of the RI78V4.
This area consists of the following items.

<table>
<tr><td>Area Name</td><td colspan="2">An icon and the name of the managed memory area are shown in the following format.
Icon Name</td></tr>
<tr><td></td><td>kernel_system</td><td>Area where kernel codes are to be allocated.</td></tr>
<tr><td></td><td>kernel_system_timer_n</td><td>Area where the system timer code and the infomation of far branch code for interrupt handler are to be allocated.</td></tr>
<tr><td></td><td>kernel_info</td><td>Area where information items such as the RI78V4 version are to be allocated.</td></tr>
<tr><td></td><td>kernel_const
kernel_const_f</td><td>Area where initial information items related to OS resources that do not change dynamically are allocated as system information tables.</td></tr>
<tr><td></td><td>kernel_stack</td><td>Area where the system stack and the task stack are to be allocated.</td></tr>
<tr><td></td><td>kernel_data</td><td>Area where managed objects for RI78V4 are to be allocated.</td></tr>
<tr><td></td><td>kernel_data_init</td><td>Area where information itemes related to RI78V4 initialization.</td></tr>
<tr><td></td><td>kernel_workn</td><td>Area where fixed-sized memory pools are to be allocated.</td></tr>
<tr><td></td><td>kernel_data_trace_n
kenrel_const_trace_f</td><td>Area where the trace data and information necessary to get the trace data are to be allocated.</td></tr>
<tr><td></td><td>kernel_system_trace_f</td><td>Area where the codes for getting the trace data are to be allocated.</td></tr>
<tr><td></td><td>kernel_sbss</td><td>Area of SADDR for RI78V4</td></tr>
<tr><td>Top Address</td><td colspan="2">The start address of the managed memory area is shown.</td></tr>
<tr><td>Size</td><td colspan="2">The size of the managed memory area (in bytes) is shown.</td></tr>
</table>

Remark If the memory area information (e.g. Area Name and Top Address) in each cell is double clicked, then Memory panel displays the contents of the managed memory area, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Area Name, Top Address, Size	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. Top Address, Size	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

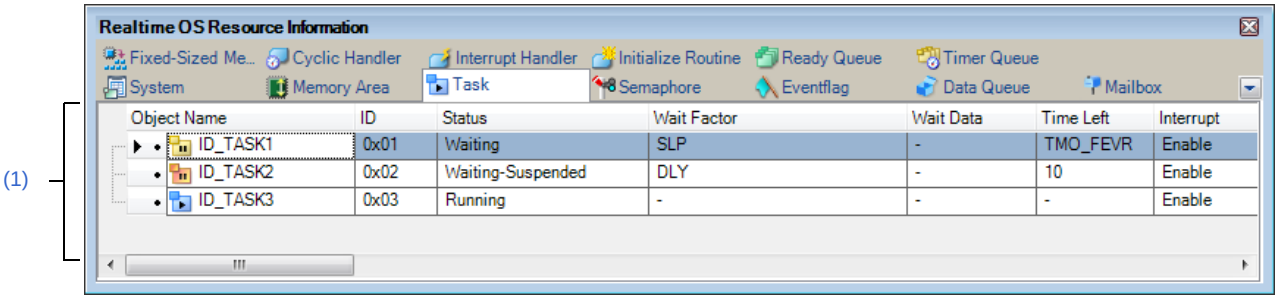
(2) Footer row

Jump to Memory (Top Address)	Opens the Memory panel, and displays the contents of the managed memory area.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Task] tab

This tab displays the task information (e.g. Task Name and ID) of the RI78V4.

Figure A-4. [Task] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the task information (e.g. Task Name and ID) of the RI78V4.
This area consists of the following items.

Task Name	An icon indicating the current status of the task and the name of the task are shown in the following format. Icon Name Note that if the name of the task is undefined, the name will appear as "ID".	
		DORMANT state
		READY state
		RUNNING state
		WAITING state
		SUSPENDED state
		WAITING-SUSPENDED state
ID	The ID of the task is shown.	

Status	The current state of the task is shown.	
	Dormant	DORMANT state
	Ready	READY state
	Running	RUNNING state
	Waiting	WAITING state
	Suspended	SUSPENDED state
	Waiting-Suspended	WAITING-SUSPENDED state
Wait Factor	The wait factor (type of WAITING state, object ID and attribute of WAITING state) of the task are shown in the following format. Type (ID) Attribute Note that if the current state of the task is other than WAITING state or WAITING-SUSPENDED state, "-" appears. If the WAITING state type is sleeping state or delayed state, then "(Object ID)" is not shown.	
	[Type of WAITING state]	
	SLP	Sleeping state
	DLY	Delayed state
	SEM	Waiting state for a semaphore resource
	FLG	Waiting state for an eventflag
	DTQ	Waiting state for data
	MBX	Receiving waiting state for a mailbox
	MPF	Waiting state for a fixed-sized memory block
	[Attribute of WAITING state]	
	ANDW	AND waiting condition
	ORW	OR waiting condition
	FIFO	FIFO order
	PRI	Task Priority order
Wait Data	The request conditions triggering the task's transition to WAITING state are shown. Note that if the current state of the task is other than waiting state for an eventflag, "-" is shown.	
	Wait bit pattern	Waiting state for an eventflag
Time Left	The time left until the delayed state is released (in tick) is shown. Note that if the task is waiting forever, "TMO_FEVR" appears. If the current state of the task is other than WAITING state or WAITING-SUSPENDED state, "-" appears.	
Interrupt	The current interrupt state of the task is shown.	
	Disable	All interrupts are disabled.
	Enable	All interrupts are enabled.
Current Priority	The current priority of the task is shown.	
Task Start Address	The start address of the task is shown.	
Current PC	The current PC value of the task is shown.	

Current Task SP	The current SP value of the task is shown.	
Task Stack Area	The start address, end address, and size (in bytes) of the task stack are shown in the following format. Start address - End address (Size)	
Initial Priority	The initial priority of the task is shown.	
Suspend Count	The suspension count of the task is shown.	
Wakeup Count	The wakeup request count of the task is shown.	
Activate Count	The activation request count of the task is shown.	
Attribute	The attributes of the task (coding language of task, initial activation state of task and initial interrupt state of task) are shown in the following format. Coding language Initial activation state Initial interrupt state	
	[Coding language of task]	
	TA_HLNG	C language
	TA_ASM	Assembly language
	[Initial activation state of task]	
	TA_ACT	READY state
	Nothing displayed	DORMANT state
	[Initial interrupt state of task]	
	TA_DISINT	All interrupts are disabled at task activation.
	TA_ENAINT	All interrupts are enabled at task activation.
Extended Information	The extended information of the task is shown.	
Tex Start Address	"-" is shown.	
Tex Status	"-" is shown.	
Tex Request Pattern	"-" is shown.	
Tex Executing Pattern	"-" is shown.	
Tex Attribute	"-" is shown.	

Remarks 1. If the task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC, Initial Priority, Suspend Count, Wakeup Count, Activate Count, Attribute, Extended Information, Tex Status, Tex Request Pattern, Tex Executing Pattern, Tex Attribute) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the task information (Current Task SP, Task Stack Area) in each cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC, Current Task SP, Task Stack Area, Initial Priority, Suspend Count, Wakeup Count, Activate Count, Attribute, Extended Information, Tex Start Address, Tex Status, Tex Request Pattern, Tex Executing Pattern, Tex Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Wait Factor, Wait Data, Time Left, Current Priority, Task Start Address, Current PC, Current Task SP, Task Stack Area, Initial Priority, Suspend Count, Wakeup Count, Activate Count, Extended Information, Tex Start Address, Tex Request Pattern, Tex Executing Pattern	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

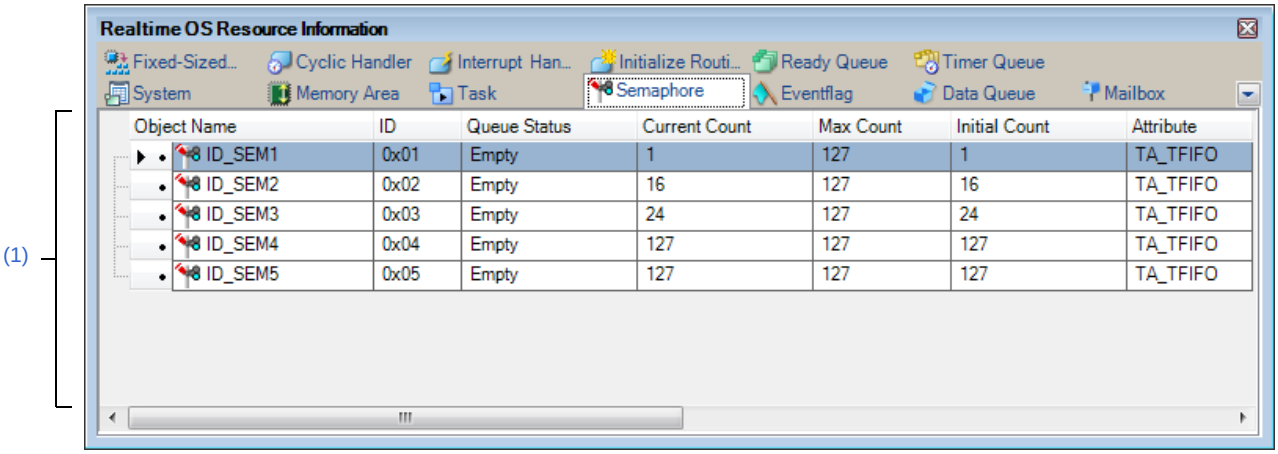
(2) Footer row

Jump to Source (Task Start Address)	Opens the Editor panel, and displays the source code of the task.
Jump to Disassemble (Task Start Address)	Opens the Disassemble panel, and displays the results of disassembling the task.
Jump to Source (Current PC)	Opens the Editor panel, and displays the contents of the Current PC.
Jump to Disassemble (Current PC)	Opens the Disassemble panel, and displays the contents of the Current PC.
Jump to Memory (Current Task SP)	Opens the Memory panel, and displays the contents of the Current Task SP.
Jump to Source (Tex Start Address)	This item will be grayed out.
Jump to Disassemble (Tex Start Address)	This item will be grayed out.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Semaphore] tab

This tab displays the semaphore information (e.g. Semaphore Name and ID) of the RI78V4.

Figure A-5. [Semaphore] Tab



Object Name	ID	Queue Status	Current Count	Max Count	Initial Count	Attribute
ID_SEM1	0x01	Empty	1	127	1	TA_TFIFO
ID_SEM2	0x02	Empty	16	127	16	TA_TFIFO
ID_SEM3	0x03	Empty	24	127	24	TA_TFIFO
ID_SEM4	0x04	Empty	127	127	127	TA_TFIFO
ID_SEM5	0x05	Empty	127	127	127	TA_TFIFO

The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the semaphore information (e.g. Semaphore Name and ID) of the RI78V4.
This layer consists of the following items.

Semaphore Name	An icon indicating the current status of the semaphore and the name of the semaphore are shown in the following format. Icon Name Note that if the name of the semaphore is undefined, the name will appear as "ID".	
		There are waiting tasks.
		There are no waiting tasks.
ID	The ID of the semaphore is shown.	

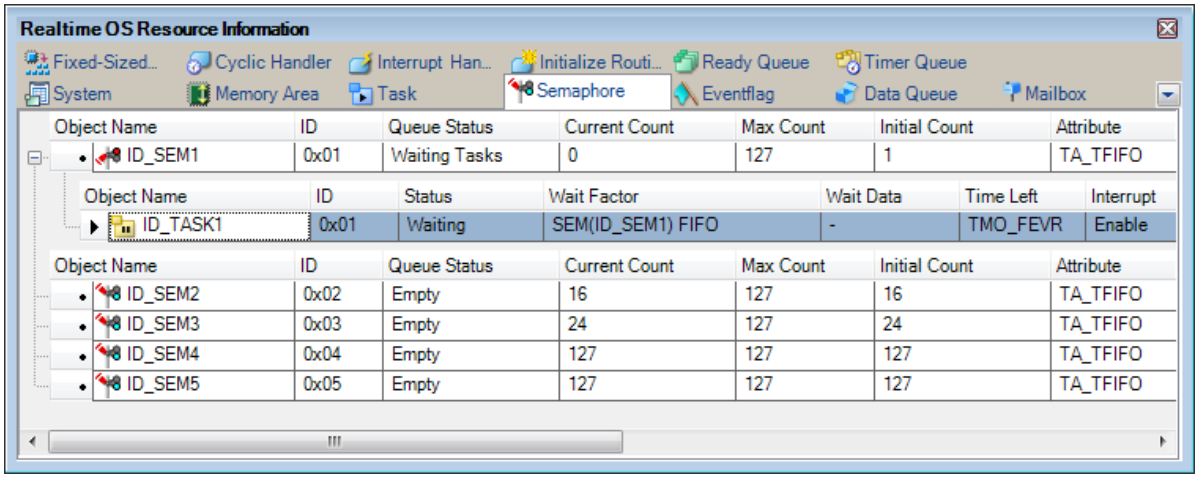
Queue Status	The current status of the semaphore is shown.	
	Waiting Tasks	There are waiting tasks.
	Empty	There are no waiting tasks.
Current Count	The current resource count of the semaphore is shown.	
Max Count	The maximum resource count "127" of the semaphore is shown.	
Initial Count	The initial resource count of the semaphore is shown.	
Attribute	The task queuing method "TA_TFIFO" is shown.	
	TA_TFIFO	FIFO order

(b) Second layer

The waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the semaphore's wait queue.

See the [Task] tab for details about waiting task information.

Figure A-6. [Semaphore] Tab (Waiting Task Information)



Remarks 1. If the waiting task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the waiting task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Semaphore Name, ID, Queue Status, Current Count, Max Count, Initial Count, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Current Count, Max Count, Initial Count	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

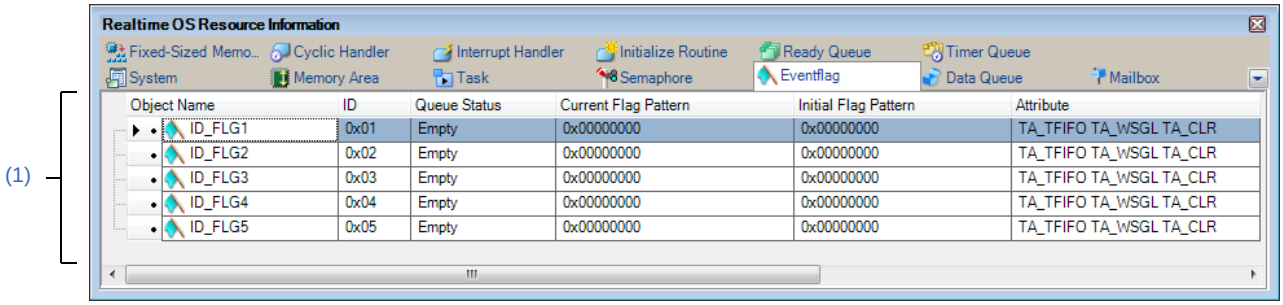
(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Eventflag] tab

This tab displays the eventflag information (e.g. Eventflag Name and ID) of the RI78V4.

Figure A-7. [Eventflag] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the eventflag information (e.g. Eventflag Name and ID) of the RI78V4.
This layer consists of the following items.

Eventflag Name	An icon indicating the current status of the eventflag and the name of the eventflag are shown in the following format. Icon Name Note that if the name of eventflag is undefined, the name will appear as "ID".	
		There are waiting tasks.
		There are no waiting tasks.
ID	The ID of the eventflag is shown.	
Queue Status	The current status of the eventflag is shown.	
	Waiting Tasks	There are waiting tasks.
	Empty	There are no waiting tasks.
Current Flag Pattern	The current bit pattern of the eventflag is shown.	
Initial Flag Pattern	The initial bit pattern "0x0000" of the eventflag is shown.	

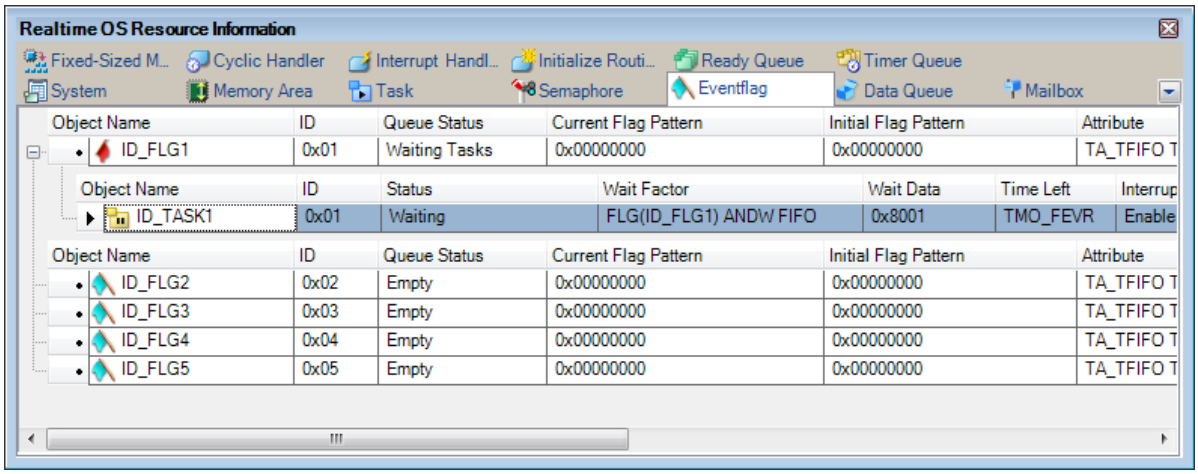
Attribute	The attributes of the eventflag (task queuing method, maximum number of tasks that can be queued and bit pattern clearing flag) are shown in the following format. Queuing method Maximum number Clearing flag	
	[Task queuing method]	
	TA_TFIFO	FIFO order
	[Maximum number of tasks that can be queued]	
	TA_WSGL	Only one task
	[Bit pattern clearing flag]	
	TA_CLR	Bit pattern cleared if the request conditions are met.
	Nothing displayed	Bit pattern not cleared if the request conditions are met.

(b) Second layer

The waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the eventflag's wait queue.

See the [Task] tab for details about waiting task information.

Figure A-8. [Eventflag] Tab (Waiting Task Information)



Remarks 1. If the waiting task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the waiting task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Eventflag Name, ID, Queue Status, Current Flag Pattern, Initial Flag Pattern, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Current Flag Pattern, Initial Flag Pattern	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

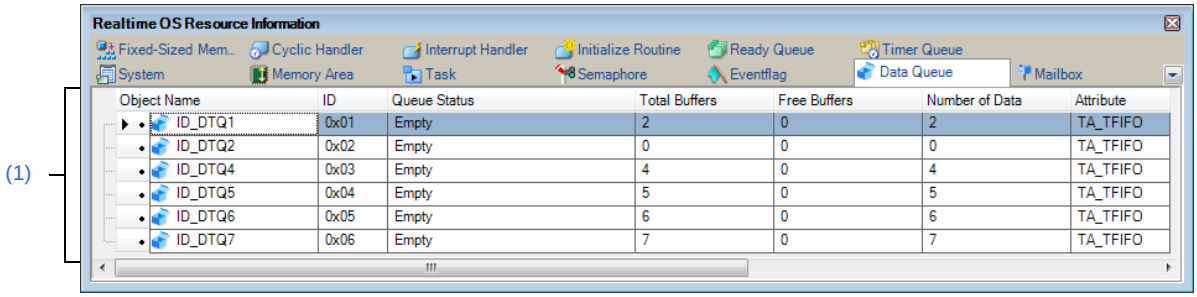
(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Data Queue] tab

This tab displays the data queue information (e.g. Data Queue Name and ID) of the RI78V4.

Figure A-9. [Data Queue] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the data queue information (e.g. Data Queue Name and ID) of the RI78V4.
This layer consists of the following items.

Data Queue Name	An icon indicating the current status of the data queue and the name of the data queue are shown in the following format. Icon Name Note that if the name of the data queue is undefined, the name will appear as "ID".	
		There are queued tasks (sending waiting tasks).
		There are queued tasks (receiving waiting tasks).
		There are queud data (receiving waiting data).
		There are no queued tasks/data (waiting tasks/ receiving waiting data).
ID	The ID of the data queue is shown.	

Queue Status	The current status of the data queue is shown.	
	Waiting Tasks (Send)	There are queued tasks (sending waiting tasks).
	Waiting Tasks (Receive)	There are queued tasks (receiving waiting tasks).
	Waiting Data	There are queud data (receiving waiting data).
	Empty	There are no queued tasks/data (waiting tasks/ receiving waiting data).
Total Buffers	Displays the maximum number of data buffers that can be queued.	
Free Buffers	Displays the number of free buffers in the data queue. The number of free buffers is the total number of buffers minus the number of buffers receiving waiting data.	
Number of data	Displays the number of data in buffers.	
Attribute	Displays the queuing method of the sending waiting tasks. If the queuing method of the receiving waiting tasks is "data reception request order", then the queuing method of the receiving waiting data will be "data send request order".	
	TA_TFIFO	FIFO order

(b) Second layer

<1> Sending waiting task/receive waiting task information

The sending/receiving waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the data queue's wait queue.

See the [Task] tab for details about sending/receiving waiting task information.

Figure A-10. [Data Queue] Tab (Sending Waiting Task Information)

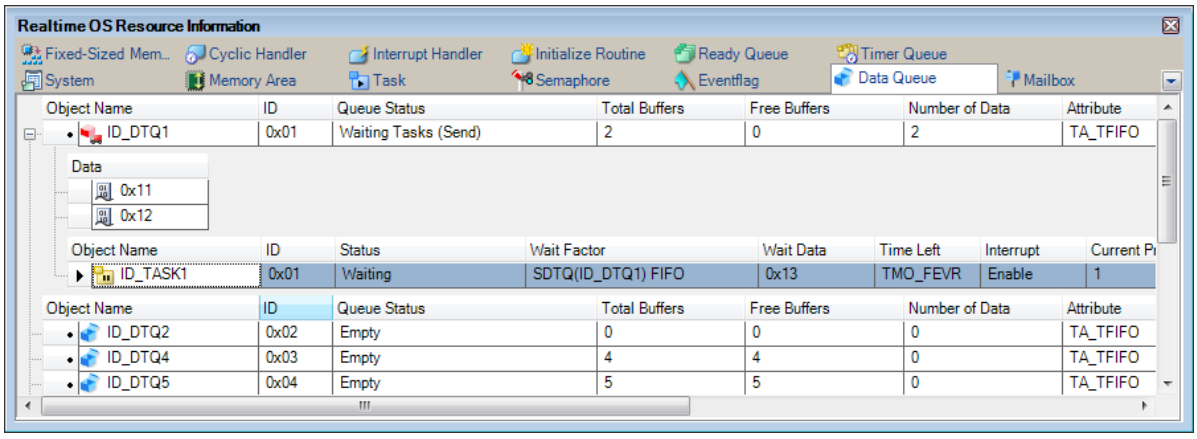
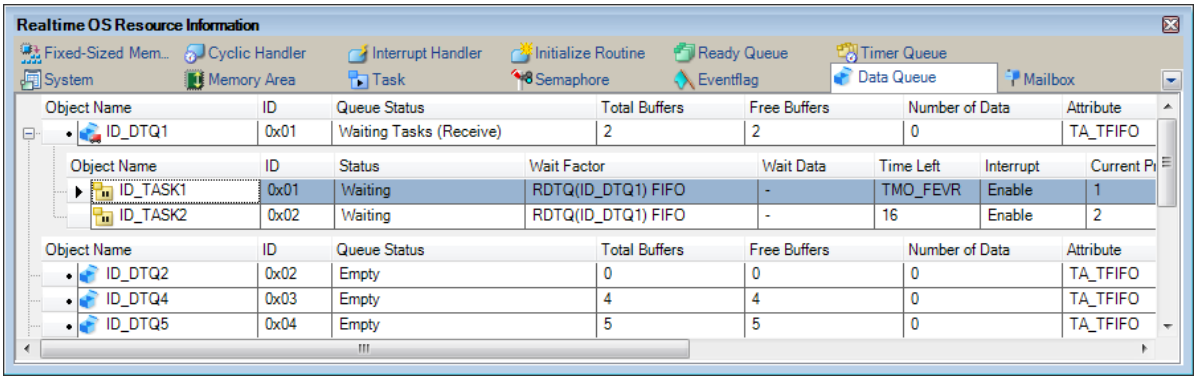


Figure A-11. [Data Queue] Tab (Receiving Waiting Task Information)



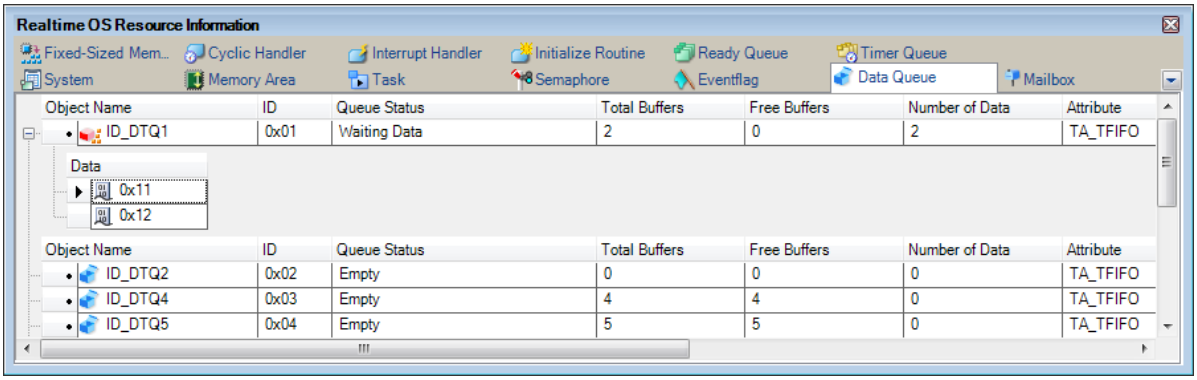
Remarks 1. If the sending waiting task and receiving waiting task information (Task Name , ID etc) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the sending waiting task and receiving waiting task information (Current Task SP, Task stack area) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

<2> Receiving waiting data information

The receiving waiting data information (e.g. Data) only appears if there are data queued in the data queue.

Figure A-12. [Data Queue] Tab (Receiving Waiting Data Information)



This area consists of the following items.

Data	the contents of the data is shown.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Data Queue Name, ID, Queue Status, Total Buffers, Free Buffers, Number of Data, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Total Buffers, Free Buffers, Number of Data	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

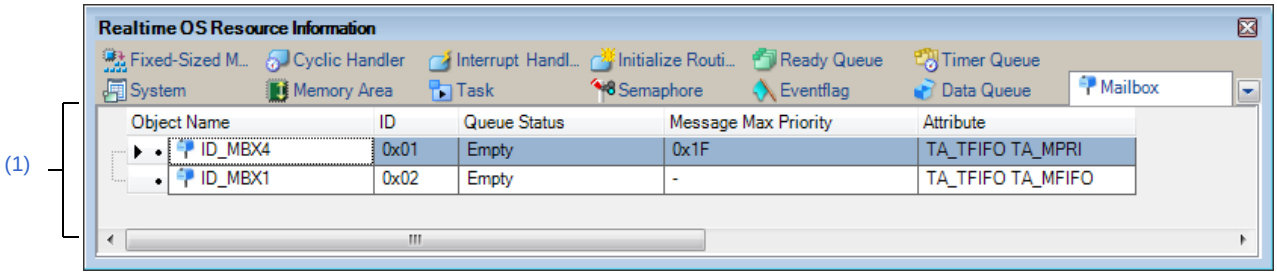
(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Mailbox] tab

This tab displays the mailbox information (e.g. Mailbox Name and ID) of the RI78V4.

Figure A-13. [Mailbox] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the mailbox information (e.g. Mailbox Name and ID) of the RI78V4.
This layer consists of the following items.

Mailbox Name	An icon indicating the current status of the mailbox and the name of the mailbox are shown in the following format. Icon Name Note that if the name of the mailbox is undefined, the name will appear as "ID".	
		There are waiting tasks.
		There are waiting messages.
		There are no waiting tasks/messages.
ID	The ID of the mailbox is shown.	
Queue Status	The current status of the mailbox is shown.	
	Waiting Tasks	There are waiting tasks.
	Waiting Messages	There are no waiting messages.
	Empty	There are no waiting tasks/messages.
Message Max Priority	The maximum priority of the message “0x1F“ is shown. Note that if the message queuing method is TA_MFIFO, "-" appears.	

Attribute	The attributes of the mailbox (task queuing method and message queuing method) are shown in the following format. Task Message	
	[Task queuing method]	
	TA_TFIFO	FIFO order
	[Message queuing method]	
	TA_MFIFO	FIFO order
	TA_MPRI	Message priority order

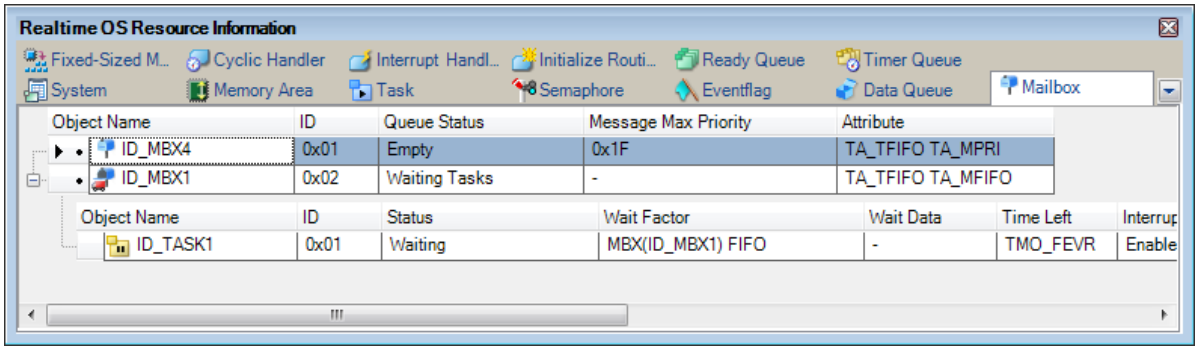
(b) Second layer

<1> Waiting task information

The waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the mailbox's wait queue.

See the [Task] tab for details about waiting task information.

Figure A-14. [Mailbox] Tab (Waiting Task Information)



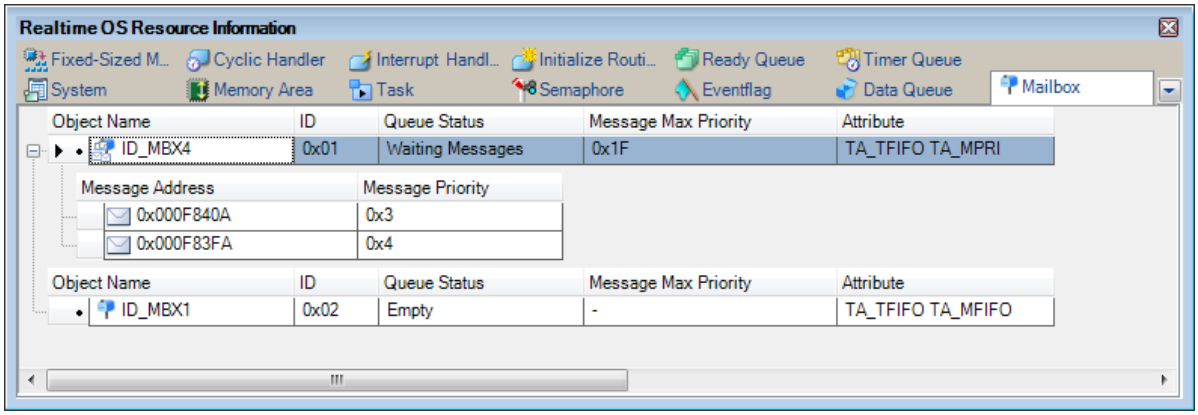
Remarks 1. If the waiting task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the waiting task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

<2> Waiting message information

The waiting message information (e.g. Message Address and Message Priority) only appears if there are messages queued in the mailbox's wait queue.

Figure A-15. [Mailbox] Tab (Waiting Message Information)



This area consists of the following items.

Message Address	The start address of the message is shown.
Message Priority	The priority of the message is shown. Note that if the priority is not assigned, "-" is shown.

Remark If the waiting message information (Message Address, Message Priority) in each cell is double clicked, then Memory panel displays the contents of the message, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Mailbox Name, ID, Queue Status, Message Max Priority, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Message Max Priority	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

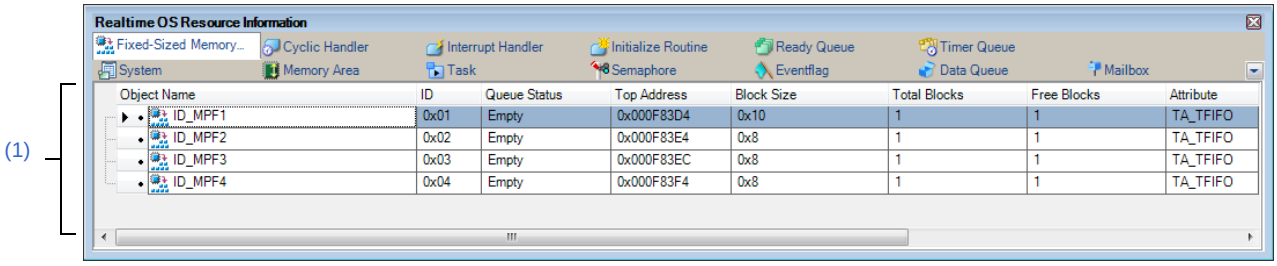
(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Fixed-Sized Memory Pool] tab

This tab displays the fixed-sized memory pool information (e.g. Fixed-Sized Memory Pool Name and ID) of the RI78V4.

Figure A-16. [Fixed-Sized Memory Pool] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the fixed-sized memory pool information (e.g. Fixed-Sized Memory Pool Name and ID) of the RI78V4.

This layer consists of the following items.

Fixed-Sized Memory Pool Name	An icon indicating the current status of the fixed-sized memory pool and the name of the fixed-sized memory pool are shown in the following format. Icon Name Note that if the name of the fixed-sized memory pool is undefined, the name will appear as "ID".	
		There are waiting tasks.
		There are no waiting tasks.
ID	The ID of the fixed-sized memory pool is shown.	
Queue Status	The current status of the fixed-sized memory pool is shown.	
	Waiting Tasks	There are waiting tasks.
	Empty	There are no waiting tasks.
Top Address	The start address of the fixed-sized memory pool is shown.	
Block Size	The size per block (in bytes) of the fixed-sized memory pool is shown.	
Total Blocks	The block count of the fixed-sized memory pool is shown.	

Free Blocks	The number of free memory blocks is shown.	
Attribute	The task queuing method "TA_TFIFO" is shown.	
	TA_TFIFO	FIFO order

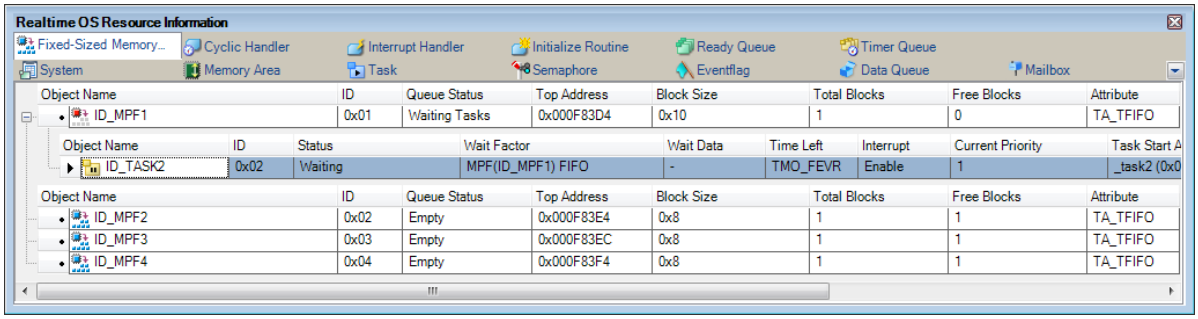
Remark If the fixed-sized memory pool information (e.g. Fixed-Sized Memory Pool Name and ID) in each cell is double clicked, then Memory panel displays the contents of the fixed-sized memory pool, and the caret moves to the corresponding location.

(b) Second layer

The waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the fixed-sized memory pool's wait queue.

See the [Task] tab for details about waiting task information.

Figure A-17. [Fixed-Sized Memory Pool] Tab (Waiting Task Information)



Remarks 1. If the waiting task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the waiting task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Fixed-Sized Memory Pool Name, ID, Queue Status, Top Address, Block Size, Total Blocks, Free Blocks, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Top Address, Block Size, Total Blocks, Free Blocks	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

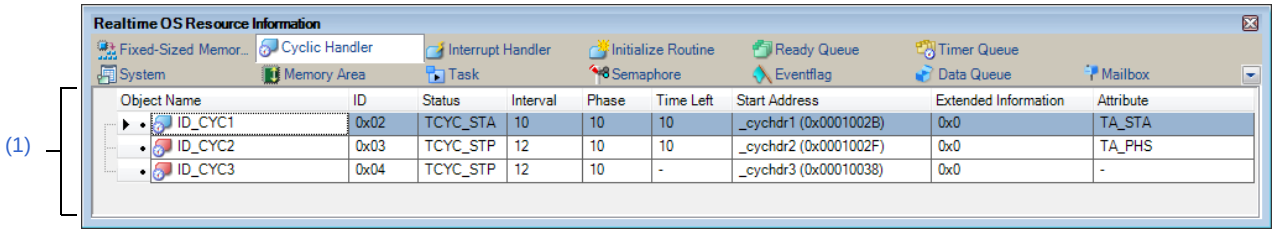
(2) Footer row

Jump to Memory (Top Address)	Opens the Memory panel, and displays the contents of the fixed-sized memory pool.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Cyclic Handler] tab

This tab displays the cyclic handler information (e.g. Cyclic Handler Name and ID) of the RI78V4.

Figure A-18. [Cyclic Handler] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the cyclic handler information (e.g. Cyclic Handler Name and ID) of the RI78V4.
This area consists of the following items.

Cyclic Handler Name	An icon indicating the current status of the cyclic handler and the name of the cyclic handler are shown in the following format. Icon Name Note that if the name of the cyclic handler is undefined, the name will appear as "ID".	
		Non-operational state (STP state)
		Operational state (STA state)
ID	The ID of the cyclic handler is shown.	
Status	The current status of the cyclic handler is shown.	
	TCYC_STP	Non-operational state (STP state)
	TCYC_STA	Operational state (STA state)
Interval	The activation cycle (in tick) of the cyclic handler is shown.	
Phase	The initial activation phase (in tick) of the cyclic handler is shown.	
Time Left	The time left before the next activation (in tick) of the cyclic handler is shown. Note that if the current state of the cyclic handler is non-operational state, "-" appears.	
Start Address	The start address of the cyclic handler is shown.	
Extended Information	"0x0" is shown.	

Attribute	The attributes of the cyclic handler (the cyclic handler's initial activation state and existence of saved activation phases) are shown in the following format. Initial activation state Existence of saved activation phases	
	[Initial activation state of cyclic handler]	
	TA_STA	Operational state (STA state)
	Nothing displayed	Non-operational state (STP state)
	[Existence of saved activation phases]	
	TA_PHS	There are saved activation phases.
	Nothing displayed	There are no saved activation phases.

Remark If the cyclic handler information (e.g. Cyclic Handler Name and ID) in each cell is double clicked, then Editor panel displays the source file of the cyclic handler, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Cyclic Handler Name, ID, Status, Interval, Phase, Time Left, Start Address, Extended Information, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. ID, Interval, Phase, Time Left, Start Address, Extended Information	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

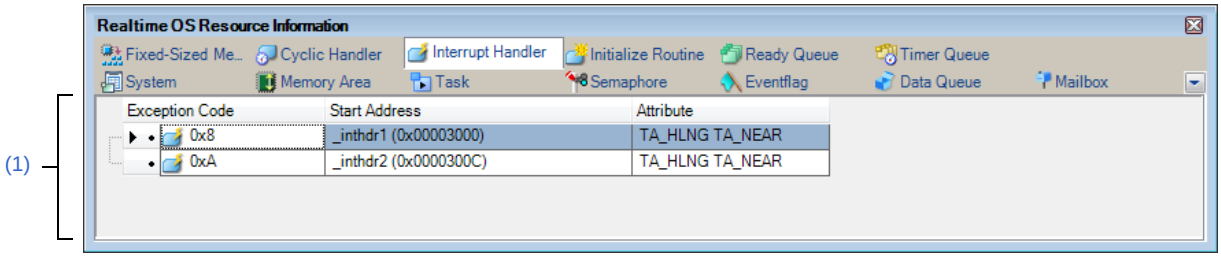
(2) Footer row

Jump to Source (Start Address)	Opens the Editor panel, and displays the source code of the cyclic handler.
Jump to Disassemble (Start Address)	Opens the Disassemble panel, and displays the results of disassembling the cyclic handler.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Interrupt Handler] tab

This tab displays the interrupt handler information (e.g. Exception Code and Start Address) of the RI78V4.

Figure A-19. [Interrupt Handler] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the interrupt handler information (e.g. Exception Code and Start Address) of the RI78V4.
This area consists of the following items.

Exception Code	An icon indicating the interrupt handler of the exception code are shown in the following format. Icon Exception code	
		Exception code
Start Address	The start address of the interrupt handler is shown.	
Attribute	The attributes of the interrupt handler (coding language of interrupt handler and information of allocation for interrupt handler) are shown in the following format. Coding language Information of allocation	
	[Coding language of interrupt handler]	
	TA_HLNG	C language
	TA_ASM	Assembly language
	[Information of allocation for interrupt handler]	
	TA_NEAR	Allocates NEAR areas
	TA_FAR	Allocates FAR areas

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Exception Code, Start Address, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. Exception Code, Start Address	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

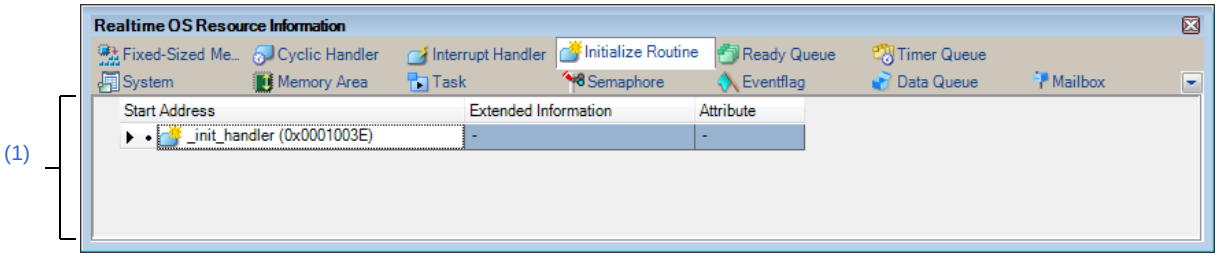
(2) Footer row

Jump to Source (Start Address)	Opens the Editor panel, and displays the source code of the interrupt handler.
Jump to Disassemble (Start Address)	Opens the Disassemble panel, and displays the results of disassembling the interrupt handler.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Initialize Routine] tab

This tab displays the initialize routine information (e.g. Start Address and Extended Information) of the RI78V4.

Figure A-20. [Initialize Routine] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

This area displays the initialize routine information (e.g. Start Address and Extended Information) of the RI78V4.
This area consists of the following items.

Start Address	An icon and the start address of the initialize routine are shown in the following format. Icon Start address
Extended Information	"-" is shown.
Attribute	"-" is shown.

Remark If the initialize routine information (e.g. Start Address and Extended Information) in each cell is double clicked, then Editor panel displays the source file of the initialize routine, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Start Address, Extended Information, Attribute	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. Start Address, Extended Information	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

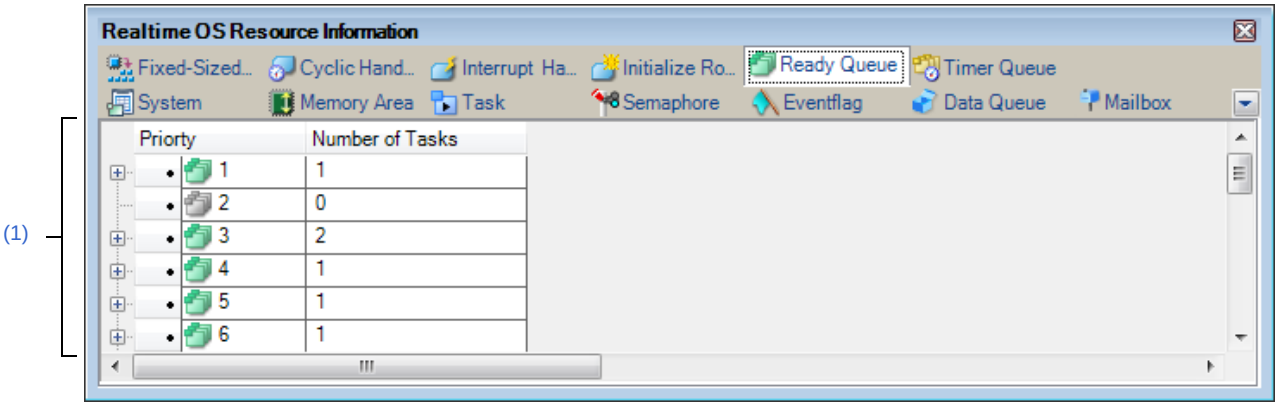
(2) Footer row

Jump to Source (Start Address)	Opens the Editor panel, and displays the source code of the initialize routine.
Jump to Disassemble (Start Address)	Opens the Disassemble panel, and displays the results of disassembling the initialize routine.
Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Ready Queue] tab

This tab displays the ready queue information (e.g. Priority and Number of Tasks) of the RI78V4.

Figure A-21. [Ready Queue] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

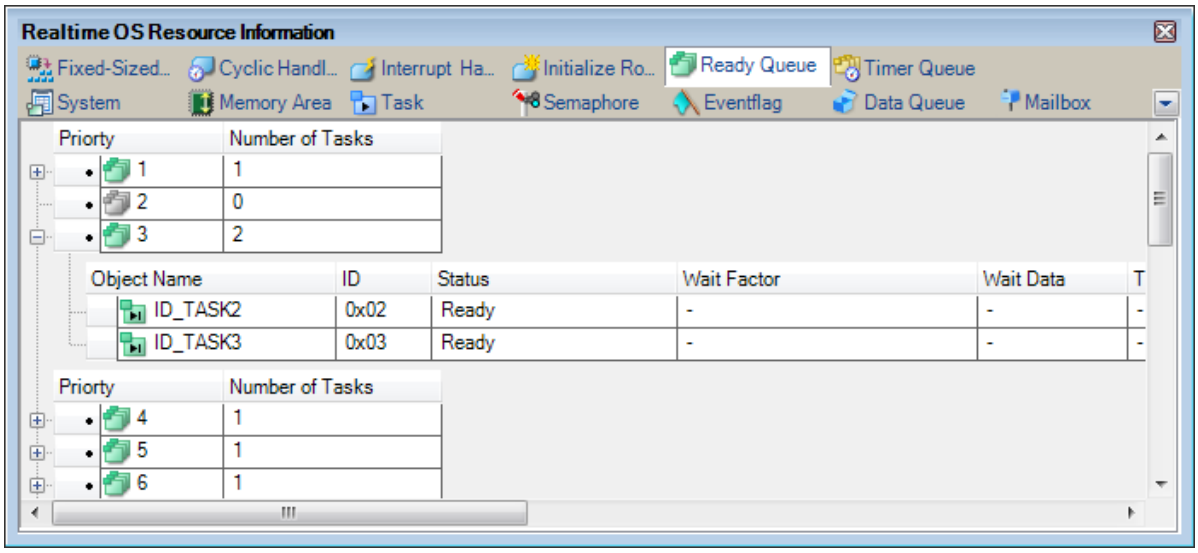
This layer displays the ready queue information (e.g. Priority and Number of Tasks) of the RI78V4.
This layer consists of the following items.

Priority	An icon indicating the current status of the ready queue and the task priority are shown in the following format. Icon Task priority	
		There are queued tasks.
		There are no queued tasks.
Number of Tasks	The total number of queued tasks (tasks with of READY state or RUNNING state) is shown.	

(b) Second layer

The executing task information (e.g. Task Name and ID) only appears if there are tasks queued in the ready queue.
See the [Task] tab for details about executing task information.

Figure A-22. [Ready Queue] Tab (Executing Task Information)



Remarks 1. If the executing task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

2. If the executing task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Priority, Number of Tasks	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. Priority, Number of Tasks	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

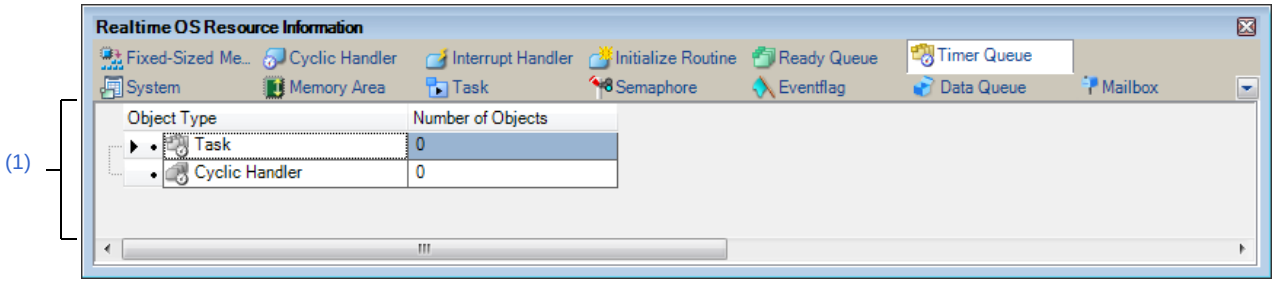
(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

[Timer Queue] tab

This tab displays the timer queue information (e.g. Object Type and Number of Objects) of the RI78V4.

Figure A-23. [Timer Queue] Tab



The following items are explained here.

- [How to open]
- [Description of each area]
- [Context menu]

[How to open]

- From the [Debug] menu, select [Download].
- From the [View] menu, select [Realtime OS] >> [Resource Information].

[Description of each area]

(1) Information display area

(a) First layer

This layer displays the timer queue information (e.g. Object Type and Number of Objects) of the RI78V4.
This layer consists of the following items.

Object Type	An icon indicating the current status of the timer queue and the object type are shown in the following format. Icon Object type	
	[Icon]	
		There are queued tasks.
		There are no queued tasks.
		There are queued cyclic handlers.
		There are no queued cyclic handlers.
	[Object type]	
	Task	Task
	Cyclic Handler	Cyclic handler
Number of Objects	The total number of queued objects (tasks and cyclic handlers) is shown.	

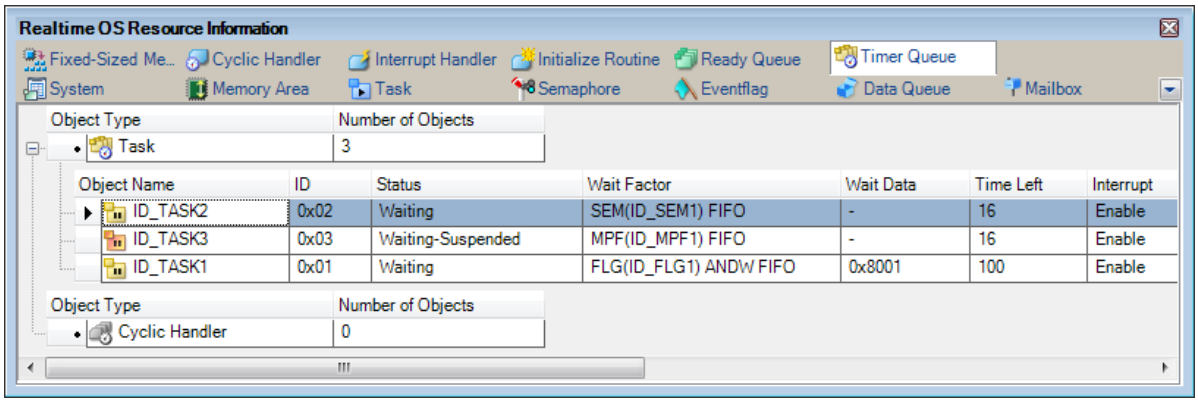
(b) Second layer

<1> Waiting task information

The waiting task information (e.g. Task Name and ID) only appears if there are tasks queued in the timer queue.

See the [Task] tab for details about waiting task information.

Figure A-24. [Timer Queue] Tab (Waiting Task Information)



Remarks 1. If the waiting task information (Task Name, ID, Status, Wait Factor, Wait Data, Time Left, Interrupt, Current Priority, Task Start Address, Current PC) in each cell is double clicked, then Editor panel displays the source file of the task, and the caret moves to the corresponding location.

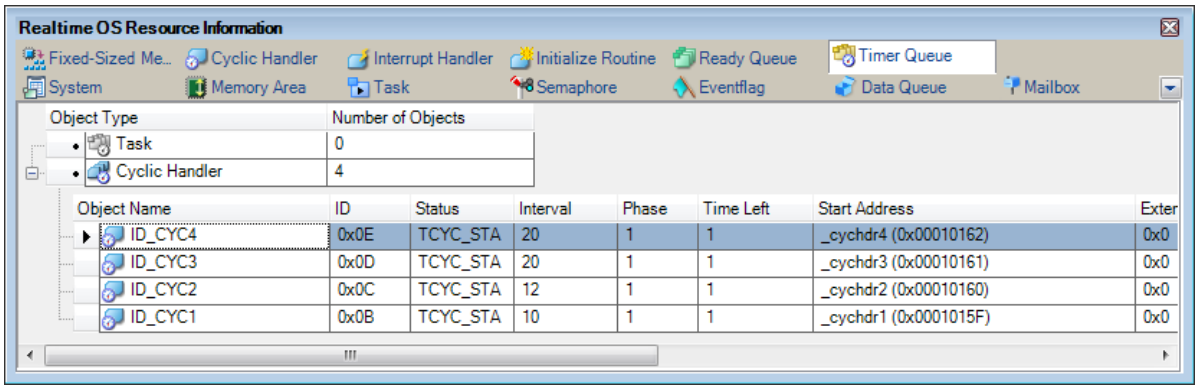
2. If the waiting task information (Current Task SP) in the cell is double clicked, then Memory panel displays the contents of the task stack, and the caret moves to the corresponding location.

<2> Cyclic handler information

The cyclic handler information (e.g. Cyclic Handler Name and ID) only appears if there are cyclic handlers queued in the timer queue.

See the [Cyclic Handler] tab for details about cyclic handler information.

Figure A-25. [Timer Queue] Tab (Cyclic Handler Information)



Remark If the cyclic handler information (e.g. Cyclic Handler Name and ID) in each cell is double clicked, then Editor panel displays the source file of the cyclic handler, and the caret moves to the corresponding location.

[Context menu]

The context menu displayed in response to a right mouse click differs as follows depending on the area clicked.

(1) Header row

Display	Displays cascade menus for selecting the header items to display.	
Selected item name	The following items are displayed for selection. Object Type, Number of Objects	
	Checked	The item in question will be displayed.
	Not checked	The item in question will not be displayed.
Notation	Displays cascade menus for selecting the display notation.	
Selected item name	The following items are displayed for selection. Number of Objects	
	DEC	Displays value in signed decimal number.
	HEX	Displays value in hexadecimal number.

(2) Footer row

Reset Display Item	Resets the display item (e.g. whether or not to display header items, display notation, display order and display width).

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